

## CLAIMS

1 1. An apparatus comprising:  
2 a CPU;  
3 a memory coupled to the CPU;  
4 an advertising optimization mechanism residing in the memory and being  
5 executed by the CPU, the advertising optimization mechanism iteratively  
6 modifying and scoring a base advertising schedule in order to achieve an optimal  
7 advertising schedule.

1 2. The apparatus of claim 1 further comprising a graphical user interface with a  
2 plurality of icons which provide a plurality of choices for advertising  
3 optimization.

1 3. The system of claim 1 further comprising at least one index residing in the  
2 memory and cooperating with the the advertising optimization mechanism to  
3 iteratively modify and score the base advertising schedule.

1 4. The apparatus of claim 3 wherein the at least one index comprises at least one of  
2 an exposure valuation index, an audience valuation index, an exposure recency  
3 index, a response index and a cost index.

1 5. The apparatus of claim 1 further comprising a database mining engine residing in  
2 the memory.

1 6. The apparatus of claim 5 wherein the database mining engine further comprises a  
2 plurality of Boolean filters used to screen the plurality of person-by-person  
3 records contained in the database.

1 7. The apparatus of claim 1 further comprising a data conversion mechanism  
2 residing in the memory.

1 8. The apparatus of claim 7 wherein the data conversion mechanism comprises a  
2 mechanism to convert data from a first data format to a second data format.

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1 9. The apparatus of claim 8 wherein the first data format is a plurality of television  
2 viewing records received from A.C. Nielsen and the second data format is a  
3 binary representation of the plurality of television viewing records.

1 10. The system of claim 1 further comprising a plurality of indices residing in the  
2 memory and cooperating with the the advertising optimization mechanism to  
3 iteratively modify and score the base advertising schedule.

1 11. The apparatus of claim 3 wherein the plurality of indices comprises at least two of  
2 an exposure valuation index, an audience valuation index, an exposure recency  
3 index, a response index and a cost index.

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A computer system for optimizing an advertising schedule, the computer system comprising:

3

a CPU;

4

a memory coupled to the CPU;

5

a database residing in the memory, the database containing a plurality of person-

6

by-person data files, the plurality of person-by-person data;

7

a database mining engine residing in the memory;

8

a data conversion mechanism residing in the memory, the data conversion

9

mechanism comprising a mechanism for converting data from a first data format

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to a second data format; and

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a graphical user interface residing in the memory and being executed by the CPU,

12

wherein the graphical user interface provides a plurality of choices for optimizing

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the advertising schedule according to a plurality of indices.

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1 13. The computer system of claim 12 wherein the first data format is a plurality of  
2 television viewing records received from A.C. Nielsen and the second data format  
3 is a binary representation of the plurality of television viewing records.

1 <sup>sub</sup>  
2 <sup>cl</sup> 14. The computer system of claim 12 wherein the plurality of indices includes an  
2 exposure valuation index, an audience valuation index, an exposure recency  
3 index, a response index and a cost index.

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- 1 15. A program product comprising:
- 2 an advertising optimization mechanism, the advertising optimization mechanism
- 3 iteratively modifying a base advertising schedule to achieve an optimal
- 4 advertising schedule; and
- 5 signal bearing media bearing the advertising optimization mechanism.
- 1 16. The program product of claim 16 wherein the signal bearing media comprises
- 2 transmission media.
- 1 17. The program product of claim 16 wherein the signal bearing media comprises
- 2 recordable media.
- 1 18. The program product of claim 16 further comprising a plurality of indices which
- 2 are utilized by the advertising optimization mechanism to iteratively modify the
- 3 base advertising schedule.

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- 1 19. The program product of claim 18 wherein the plurality of indices comprises an  
2 exposure valuation index, an audience valuation index, an exposure recency  
3 index, a response index and a cost index.
- 1 20. The program product of claim 15 further comprising a data conversion  
2 mechanism, the data conversion mechanism comprising a mechanism for  
3 converting data from a first data format to a second data format.
- 1 21. The program product of claim 20 wherein the first data format is a plurality of  
2 television viewing records received from A.C. Nielsen and the second data format  
3 is a plurality of variable length records which describe changes in media-related  
4 access data for a target audience.
- 1 22. The program product of claim 20 wherein the first data format is a plurality of  
2 television viewing records received from A.C. Nielsen and the second data format  
3 is a binary representation of the plurality of television viewing records.

1 23. A method for advertising optimization, the method comprising the step of  
2 iteratively modifying a base advertising schedule according to at least one of a  
3 plurality of indices in order to achieve an optimal advertising schedule.

1 24. The method of claim 23 wherein the plurality of indices comprises an exposure  
2 valuation index, an audience valuation index, an exposure recency index, a  
3 response index and a cost index.

1 25. The method of claim 23 wherein the step of iteratively modifying a base  
2 advertising schedule comprises using a weighted effective frequency method to  
3 score and compare a plurality of possible alternative advertising schedules.

1 26. The method of claim 25 wherein the step of scoring and comparing a plurality of  
2 possible alternative advertising schedules comprises the step of assigning a value  
3 to a modified advertising campaign based on previous or anticipated individual or  
4 collective advertising exposure.



1     27.     The method of claim 23 wherein the step of iteratively modifying a base  
2           advertising schedule comprises using a time weighted effective frequency method  
3           to score and compare a plurality of possible alternative advertising schedules.

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- 1      28.      A computer-implemented method, the method comprising the steps of:
- 2            (a)      providing an advertising campaign containing a plurality of advertising
- 3                   spots;
- 4            (b)      identifying one of the plurality of advertising spots as a least valuable
- 5                   advertising spot;
- 6            (c)      removing the least valuable advertising spot from the advertising
- 7                   campaign;
- 8            (d)      identifying a plurality of alternative options to add to the advertising
- 9                   campaign;
- 10          (e)      selecting one of the plurality of alternative options and adding the selected
- 11                   alternative option to the advertising campaign to achieve a modified
- 12                   advertising campaign;
- 13          (f)      scoring the modified advertising campaign; and
- 14          (g)      repeating steps b, c, d, e, and f in order to achieve an optimal advertising
- 15                   schedule.

1 29. The method of claim 28 wherein the step of scoring the modified advertising  
2 campaign comprises the step of using a weighted effective frequency method to  
3 score the modified advertising campaign.

1 30. The method of claim 28 wherein the step of scoring the modified advertising  
2 campaign comprises the step of using a time weighted effective frequency method  
3 to score the modified advertising campaign.

1 31. The method of claim 28 wherein the step of scoring the modified advertising  
2 campaign comprises the step of using at least one index to score the modified  
3 advertising campaign.

1 32. The method of claim 31 wherein the step of scoring the modified advertising  
2 campaign using at least one index to score the modified advertising campaign  
3 comprises the step of using a plurality of indices to score the modified advertising  
4 campaign.

1 33. The method of claim 32 wherein the step of scoring the modified advertising  
2 campaign using a plurality of indices comprises the step of using at least two of an  
3 exposure valuation index, an audience valuation index, an exposure recency  
4 index, a response index and a cost index to score the modified advertising  
5 campaign.

1 34. The method of claim 33 further comprising the step of using a series of product  
2 usage data as an input for the response index.

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1 35. A graphical user interface comprising at least one icon which accesses a plurality  
2 of person-by-person records contained in a database via a database mining engine  
3 and presents at least one advertising optimization choice to a user of the graphical  
4 user interface.

1 36. The graphical user interface of claim 35 further comprising a scoring mechanism  
2 which provides a score for an advertising campaign based on a plurality of  
3 indices.

1 37. The graphical user interface of claim 36 wherein the scoring mechanism uses a  
2 plurality of indices to score the advertising campaign.

1 38. The graphical user interface of claim 37 wherein the plurality of indices  
2 comprises at least two of an exposure valuation index, an audience valuation  
3 index, an exposure recency index, a response index and a cost index.

- 1 39. A computer system with a graphical user interface comprising:
  - 2 a CPU;
  - 3 a memory coupled to the CPU;
  - 4 a database residing in the memory, the database comprising a plurality of person-
  - 5 by-person media-related records which describe a series of choices and decisions
  - 6 made by an identified sample audience in relation to a media vehicle;
  - 7 a database mining engine residing in the memory and being executed by the CPU;
  - 8 and
  - 9 at least one icon which accesses the plurality of person-by-person records
  - 10 contained in the database via the database mining engine and presents at least one
  - 11 advertising optimization choice to a user of the graphical user interface.
- 1 40. The computer system of claim 39 further comprising a scoring mechanism
  - 2 residing in the memory, the scoring mechanism providing a score for an
  - 3 advertising campaign.

- 1 41. A computer system for analyzing data and optimizing an advertising schedule, the
- 2 system comprising:
- 3 a CPU;
- 4 a memory coupled to the CPU;
- 5 a database residing in the memory, the database comprising a plurality of person-
- 6 by-person records which describe a series of television choices and decisions
- 7 made by an identified sample audience;
- 8 a database mining engine residing in the memory, the database mining engine
- 9 comprising a plurality of Boolean filters used to screen the plurality of person-by-
- 10 person records contained in the database; and
- 11 a graphical user interface residing in the memory and being executed by the CPU,
- 12 wherein the user interface accesses the person-by-person records in the database
- 13 via the database mining engine and iteratively optimizes the advertising schedule
- 14 using a predetermined method.

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1 42. The computer system of claim 41 wherein the predetermined method is a  
2 weighted effective frequency method.

1 43. The computer system of claim 41 wherein the predetermined method is a time  
2 weighted effective frequency method.

1 44. The computer system of claim 41 further comprising a data conversion  
2 mechanism, the data conversion mechanism comprising a mechanism for  
3 converting data from a first data format to a second data format.

1 45. The computer system of claim 44 wherein the first data format is a plurality of  
2 television viewing records received from A.C. Nielsen and the second data format  
3 is a binary representation of the plurality of television viewing records.



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1 46. A method of calculating a ratio, the method comprising the steps of:  
2 generating a first media-related exposure value;  
3 generating a second media-related exposure value; and  
4 combining the first and second media-related exposure values to create the ratio.

1 47. The method of claim 46 wherein the step of combining the first and second  
2 media-related exposure values to create the media analysis ratio comprises the  
3 step of dividing the first media-related exposure value by the second media-  
4 related exposure value.

1 48. The method of claim 46 wherein the step of generating the first media-related  
2 exposure value comprises the step of selecting a subset of person-by-person  
3 media-related access data from a database.

1 49. The method of claim 46 wherein the step of generating the second media-related  
2 exposure value comprises the step of selecting a subset of person-by-person  
3 media-related access data from a database.

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1 50. A method of calculating a media analysis ratio, the method comprising the steps  
2 of:  
3 selecting a subset of person-by-person media-related access data from a database  
4 thereby generating a first media-related exposure value;  
5 selecting a subset of person-by-person media-related access data from the  
6 database thereby generating a second media-related exposure value; and  
7 dividing the first media-related exposure value by the second media-related  
8 exposure value to create the media analysis ratio.

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- 1 51. A method of scoring an advertisement, the method comprising the steps of:
- 2 scoring each of a plurality of individual exposures to the advertisement to
- 3 determine a value for each of the plurality of individual exposures; and
- 4 combining the values determined for each of the plurality of individual exposures
- 5 to achieve an overall score for the advertisement.
- 1 52. The method of claim 51 wherein the step of scoring each of the plurality of
- 2 individual exposures to an advertisement to determine a value for each of the
- 3 plurality of individual advertising exposures comprises the step of using a
- 4 plurality of factors in combination to score each of the plurality of individual
- 5 exposures to an advertisement.

1 53. A computer system with a graphical user interface comprising:  
2 a CPU;  
3 a memory coupled to the CPU;  
4 a database residing in the memory, the database comprising a plurality of person-  
5 by-person media-related records which describe a series of choices and decisions  
6 made by an identified sample audience in relation to a media vehicle;  
7 a database mining engine residing in the memory and being executed by the CPU;  
8 and  
9 a graphical user interface with at least one icon which accesses the plurality of  
10 person-by-person records contained in the database via the database mining  
11 engine and presents at least one advertising optimization choice to a user of the  
12 graphical user interface.

1 54. The computer system of claim 53 wherein the graphical user interface further  
2 comprises a mechanism for evaluating a plurality of alternative advertising  
3 options.

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1 55. The computer system of claim 54 wherein the mechanism for evaluating a  
2 plurality of alternative advertising options comprises a mechanism for distributing  
3 advertisements over time and space based on actual or anticipated individual or  
4 collective advertising exposure.

1 56. The computer system of claim 54 wherein the mechanism for evaluating a  
2 plurality of alternative advertising options comprises a mechanism for assigning  
3 advertising response values to a plurality of media alternatives.

1 57. The computer system of claim 54 wherein the mechanism for evaluating a  
2 plurality of alternative advertising options comprises a mechanism for assigning  
3 costs to the plurality of alternative advertising options based on time or space  
4 boundaries for the purpose of scoring the plurality of alternative advertising  
5 options.

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1 58. The computer system of claim 54 wherein the mechanism for evaluating a  
2 plurality of alternative advertising options comprises a mechanism for assigning  
3 individual exposure values to the plurality of alternative advertising options  
4 according to the value of at least one of a plurality of individual demographic  
5 measurements.

1 59. The computer system of claim 58 wherein the mechanism for assigning individual  
2 exposure values comprises a mechanism for displaying the individual exposure  
3 values of the at least one of a plurality of individual demographic measurements.

1 60. The computer system of claim 54 wherein the mechanism for evaluating a  
2 plurality of alternative advertising options comprises a mechanism for displaying  
3 the estimated influence of advertising messages based on the declining influence  
4 of advertising over time.

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1 61. The computer system of claim 54 wherein the mechanism for evaluating a  
2 plurality of alternative advertising options comprises a mechanism for displaying  
3 the estimated influence of advertising messages based accumulated advertising  
4 messages over time.

1 62. The computer system of claim 54 wherein the mechanism for evaluating a  
2 plurality of alternative advertising options comprises a mechanism for assigning  
3 advertising value to multiple levels of advertising exposure based on frequency of  
4 exposure.

1 63. The computer system of claim 62 wherein the mechanism for assigning  
2 advertising value to multiple levels of advertising exposure based on frequency of  
3 exposure further comprises a mechanism for displaying the assigned advertising  
4 values.



1      64.    The computer system of claim 62 wherein the mechanism for assigning  
2           advertising value to multiple levels of advertising exposure based on frequency of  
3           exposure comprises ~~a~~ mechanism for assigning advertising value to multiple  
4           levels of advertising exposure based on actual or anticipated exposure to an  
         advertisement.

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1 65. A method for comparatively scoring a plurality of advertising options comprising  
2 the step of using a graphical user interface to evaluate a plurality of alternative  
3 advertising options.

1 66. The method of claim 65 wherein the step of using a graphical user interface to  
2 evaluate a plurality of alternative advertising options comprises the step of  
3 distributing advertisements over time and space based on actual or anticipated  
4 individual or collective advertising exposure.

1 67. The method of claim 65 wherein the step of using a graphical user interface to  
2 evaluate a plurality of alternative advertising options comprises the step of  
3 assigning advertising response values to a plurality of media alternatives.

1 68. The method of claim 65 wherein the step of using a graphical user interface to  
2 evaluate a plurality of alternative advertising options comprises the step of  
3 assigning costs to the plurality of alternative advertising options based on time or  
4 space boundaries to score each of the plurality of alternative advertising options.

1 69. The method of claim 65 wherein the step of using a graphical user interface to  
2 evaluate a plurality of alternative advertising options comprises the step of  
3 assigning individual exposure values to each of the plurality of alternative  
4 advertising options according to the value of at least one of a plurality of  
5 individual demographic measurements.

1 70. The computer system of claim 69 wherein the step of assigning individual  
2 exposure values to each of the plurality of alternative advertising options  
3 according to the value of at least one of a plurality of individual demographic  
4 measurements comprises the step of displaying the individual exposure values of  
5 the at least one of a plurality of individual demographic measurements.

1 71. The method of claim 65 wherein the step of using a graphical user interface to  
2 evaluate a plurality of alternative advertising options comprises the step of  
3 displaying the estimated influence of advertising messages based on the declining  
4 influence of advertising over time.

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1 72. The method of claim 65 wherein the step of using a graphical user interface to  
2 evaluate a plurality of alternative advertising options comprises the step of  
3 displaying the estimated influence of advertising messages based accumulated  
4 advertising messages over time.

1 73. The method of claim 65 wherein the step of using a graphical user interface to  
2 evaluate a plurality of alternative advertising options comprises the step of  
3 assigning advertising value to multiple levels of advertising exposure based on  
4 frequency of exposure.

1 74. The method of claim 73 wherein the step of assigning advertising value to  
2 multiple levels of advertising exposure based on frequency of exposure comprises  
3 the step of displaying the assigned advertising values.

1     75.    The method of claim 73 wherein the step of assigning advertising value to  
2           multiple levels of advertising exposure based on frequency of exposure comprises  
3           the step of assigning advertising value to multiple levels of advertising exposure  
4           based on actual or anticipated exposure to an advertisement.

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76. A method of calculating a score for an advertising spot, the method comprising the steps of:

3 determining a separate value for each exposure of each of a plurality of audience

4 members to the advertising spot; and

5 summing the exposure values for each of the plurality of audience members to

6 calculate the score for the advertising spot.

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1 77. The method of claim 76 wherein the step of determining a value for each exposure

2 of each of a plurality of audience members to the advertising spot comprises the

3 step of a using a weighted effective frequency method to determine a value for

4 exposing each of a plurality of audience members to the advertising spot.

1 78. The method of claim 76 wherein the step of determining a value for each exposure

2 of each of a plurality of audience members to the advertising spot comprises the

3 step of a using a time weighted effective frequency method to determine a value

4 for exposing each of a plurality of audience members to the advertising spot.

1 79. The method of claim 76 wherein the step of determining a value for each exposure  
 2 of each of a plurality of audience members to the advertising spot comprises the  
 3 step of a using predetermined formula to determine a value for each exposure of  
 4 each of a plurality of audience members to the advertising spot.

5  
 6 80. The method of claim 79 wherein the step of a using predetermined formula to  
 7 determine a value for each exposure of each of a plurality of audience members to  
 8 the advertising spot comprises the step of using the formula

$$S_b(a) = \sum_{i=1}^{N_a} \left[ V_I^n(i) \times \prod_{d=1}^D V_A^d(i) \right] \times V_T(a) \times V_R(a) \div V_C(a)$$

9  
 10  
 11 to determine a value for each exposure of each of a plurality of audience members  
 12 to the advertising spot.

1 81. The method of claim 76 wherein the step of summing the exposure values for  
 2 each of the plurality of audience members to calculate the score for the advertising  
 3 spot comprises the step of using a using predetermined formula to sum the  
 4 exposure values for each of the plurality of audience members.

1 82. The method of claim 81 wherein the step of the step of using a using  
2 predetermined formula to sum the exposure values for each of the plurality of  
3 audience members comprises the step of using the formula

4 
$$\sum_{i=1}^{N_a} \left[ V_I^n(i) \times \prod_{d=1}^D V_A^d(i) \right]$$

5 to sum the exposure values for each of the plurality of audience members.

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